

**REMARKS/ARGUMENTS**

Reconsideration of this application is requested. Claims 1-7, 10-16, 18-20, 47-60 and 62-64 are in the case.

**I. CLAIM OBJECTIONS**

Claim 19 is objected to due to the presence of "a" in the first line. Claim 19 has been amended to deal with this point.

**II. THE 35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION**

Claims 5 and 51 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. That rejection is respectfully traversed.

Claim 5 reads as follows:

5. A reactor as claimed in claim 1 in which said means for surrounding a substantial portion of said inlet pipes in said reactor with inert fluid comprises one or more outer pipes surrounding a substantial portion of said inlet pipes for molecular oxygen containing gas in said reactor and provided with a supply of inert fluid.

Claim 51 reads as follows:

51. A reactor as claimed in claim 47 in which said means for surrounding a substantial portion of said inlet pipes in said reactor with inert fluid comprises one or more outer pipes surrounding a substantial portion of said inlet pipes for molecular oxygen containing gas in said reactor and is provided with a limited supply of inert fluid.

The Examiner's attention is directed to the Figures. In particular, Figure 1 shows a configuration, as described on page 7, lines 30-32 of the specification as filed, wherein "each inlet pipe extends into the reactor (1) and a substantial portion of the inlet pipe in the reactor is surrounded by an outer pipe (3)". Two inlet pipes and two outer pipes are shown in Figure 1. Three alternative configurations are described on page 8, lines 6-19, as represented in Figure 2. Specifically, page 8, lines 18-19 describe that "more than one inlet pipe may be surrounded by a common outer pipe as is shown by Figure 2c."

Thus, it is quite clear that the at least two inlet pipes may individually have a surrounding outer pipe (as shown in Figure 1), or some of the pipes may have a common outer pipe, as shown in Figure 2c. The written description clearly supports the subject matter of claims 5 and 51, and clearly evidences that the applicants were in possession of the invention as claimed as of the filing date of the application. Withdrawal of the 35 USC 112, first paragraph, rejection is accordingly respectfully requested.

### **III. THE 35 U.S.C. § 112, SECOND PARAGRAPH, REJECTION**

Claims 1-7, 10-16, 18-20, 47-60 and 62-64 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for the reasons detailed on pages 3-4 of the Action. The rejection is traversed.

Claim 15 has been amended to deal with the antecedent point. With regard to the other formal matters, it is not seen how the claims are in any way indefinite. There is no lack of clarity with respect to claims 1 and 47. No objection arises with regard to

claims 3, 4, 49 and 50 in regard to the features defined in those claims. In claims 14 and 58, the "distance" is defined in the claims as the distance "from the outlet of said inlet pipe in the reactor such that a potential detonation is avoided." No indefiniteness arises with respect to this language. Similar comments apply with regard to claims 18 and 62. No indefiniteness is seen with regard to claims 19 and 63. The language "having an inventory" would be clear to one of ordinary skill in this art.

Withdrawal of the outstanding 35 U.S.C. § 112, second paragraph, rejection is now believed to be in order, such action is respectfully requested.

#### **IV. THE ANTICIPATION REJECTION**

Claims 1-5 and 47-51 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Japanese Patent 09-159145 to Iemori et al. The rejection is respectfully traversed.

The present invention relates to a reactor which is a fluid bed reactor, comprising a grid and at least two molecular oxygen-containing inlet gas pipes surrounded over a substantial portion by an inert fluid. This inert fluid is essentially sealed from the reactor, in that, in the absence of leaks, breakages or other failures the inert fluid does not enter the reactor.

Iemori relates to a pipe for bubbling gas into a non-ferrous refining furnace. In particular, the pipe of Iemori may bubble inert gas, air or industrial use oxygen into the furnace. The pipe may be water cooled (paragraph [0005]). The furnace of Iemori has only one inlet pipe. In addition, Iemori does not disclose that the vessel has a grid.

The Examiner has stated that Iemori discloses an embodiment in which more than one inlet pipe extends into the apparatus, as shown by element 16 in Figure 3. However, the present invention as claimed requires at least two inlet pipes which have means for surrounding a substantial portion of the inlet pipes in the reactor with an inert fluid.

Element 16 in Iemori is a concentrate burner, and does not have means for surrounding a substantial portion of said burner with an inert fluid. The furnace of Iemori has only one inlet pipe.

In addition, the Examiner has stated that Iemori illustrates a grid, as shown by the two dashed lines in Figure 3. Applicant respectfully disagrees. The dashed lines do not represent a grid, but actually represent the layers of molten material and of the slag that rests on top of said molten material in the furnace. This is supported by the fact that the abstract of Iemori states that the end of the pipe is dipped in the melted material (shown as 22 in Figure 3).

Thus, Iemori does not disclose a grid, and claims 1 and 47, and their dependent claims, are clearly novel over Iemori. Withdrawal of the anticipation rejection based on Iemori is respectfully requested.

## **V. THE OBVIOUSNESS REJECTIONS**

Claims 1-6, 10, 11, 47-52, 54 and 55 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Kittleson et al, (U.S. Re 24,485) in view of Chowdhury et al. (US 4,461,743). This rejection is respectfully traversed.

Kittleson relates to homogeneous vapor-phase reactions, such as oxidations or halogenations, carried out in contact with a turbulent phase of finely divided solids. In particular, Kittleson discloses a reactor comprising a grid and more than one inlet oxygen pipes. As noted by the Examiner, Kittleson is silent with respect to the required feature of the present invention of surrounding a substantial portion of said inlet pipes in said reactor with an inert fluid.

Chowdhury fails to cure this deficiency. Chowdhury relates to apparatus for introducing a stream containing a high oxygen concentration into a wet oxidation reactor used for oxidizing combustible materials in liquid water (column 1, lines 6-10).

Chowdhury discloses that an oxygen injection nozzle is used for injecting a mixture of water (purge water) and oxygen into a reactor (column 2, lines 19-23). The problem to be overcome by Chowdhury is to ensure that the purge water enters the reactor as a liquid, since evaporation of the water causes the potential for "flow reversal". This is achieved by use of a "thermal insulating barrier" comprising a "heat transfer resisting material" (column 2, lines 35-42).

Chowdhury clearly does not relate to apparatus for a homogeneous gas-phase reaction, but to a wet oxidation reactor for oxidizing materials in liquid water. In addition, the problem addressed by Chowdhury is to prevent water evaporation, but "flow reversal" by evaporation of water in said inlet pipes is not a concern for Kittleson. Thus, Kittleson and Chowdhury relate to completely different types of reactors, and one of ordinary skill would not have been motivated to combine the Chowdhury disclosure with that of Kittleson.

Absent any such motivation, it is clear that a *prima facie* case of obviousness is not made out in this case. Withdrawal of the obviousness rejection is respectfully requested

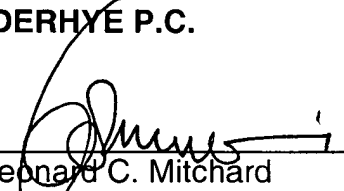
The remaining obviousness rejections rely on the combined disclosures of Kittleson and Chowdhury, taken with secondary art. In view of the above arguments, it is clear that all of the remaining obviousness rejections should be withdrawn. Such action is respectfully requested

Allowance of the application is awaited.

Respectfully submitted,

**NIXON & VANDERHYTE P.C.**

By: \_\_\_\_\_

  
Leonard C. Mitchard  
Reg. No. 29,009

LCM:lfm  
1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100